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SOME NEW REPTILES AND AMPHIBIANS.

BY THOMAS BARBOUR.

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No. 12. — *Some New Reptiles and Amphibians.* By THOMAS BARBOUR.

DURING 1906 and 1907 I was engaged in zoölogical collecting in India, Burma, and the Dutch East Indies. Collections in various branches of zoölogy were obtained, but special efforts were made to secure reptiles and amphibians in large series. For this reason Java, which is the type locality for a considerable number of forms, was rather extensively investigated. Happily with excellent results, as the time of year, December, 1906, and March and April, 1907, proved very favorable. Large numbers of natives were employed, and much aid was freely given by many of the Dutch officials, to whom thanks and credit will be given in the more detailed account of the collections. Thanks to the energy of Mr. Alan Owston of Yokohama, most excellent Japanese collectors have visited the Riu Kiu Archipelago and Formosa again and again, having provided thus a large part of the material which was used by Stejneger in his Herpetology of Japan and adjacent territory (Bull. 58, U. S. Nat. Mus., 1907). Subsequent Formosan collections have yielded the new species described here. Finally a collection replete in specimens of the highest interest was obtained from Mt. Wuchi in the interior of the island of Hainan. Concerning this region Boulenger wrote (P. Z. S., 1899, p. 956) the following on the receipt of the collections of the late Mr. John Whitehead: "The fact that so many of the few species represented in the collection are new, tends to show how rich a harvest these unexplored mountains would have yielded but for the fatal climate which has deprived the zoölogical world of one of its most enthusiastic and successful members."

Several new forms are here described from unidentified material which has long been in the collection here.

My sincere thanks are due to Dr. Stejneger, who has helped me in a most disinterested and generous way, and to Mr. Garman, whom for many years I have called on freely for advice.

REPTILIA

Goniurosaurus, gen. nov.

Digits moderate; otherwise exactly as in *Aelurosaurus*. Body covered with excessively small, flat juxtaposed scales and larger tubercle-like scales. Upper and lower eyelids well developed, as in *Aelurosaurus* (Geckonidae) and in the Eublepharidae. Pupil vertical. Tail elongate with whorls of scales proximally. That the tail is capable of being curled up is evident from its position in the type preserved in alcohol. Possibly this genus should also contain *Pentadactylus brunneus* Cope, which Boulenger placed provisionally in *Aelurosaurus*.

Goniurosaurus hainanensis, sp. nov.

Habit slender. Head depressed, subtriangular, distinct from neck; snout pointed, distance from anterior border of eye to tip of snout equal to distance from posterior border of eye to ear opening; ear opening a small, narrow, almost vertical slit. Body long, somewhat depressed. Limbs rather long, thin. Scales of top of head, body, limbs, and tail small, uniform flat granules, of varying shapes; among these on the back more or less regular longitudinal series of enlarged tubercular scales occur; these are also scattered over the upper surfaces of the limbs and are present on the proximal half of the tail in twelve whorls, which are not complete below. Scales of all the lower surfaces larger than the contour scales of the upper surfaces, polygonal, subequal. Male with twenty-nine preanal pores in an angular series. Rostral scale one and one-half times as broad as high; separated from the nostril by two enlarged superposed scales, the anterior nasals; the nostril lies behind these, and is surrounded elsewhere by small scales; it is not in contact with a supralabial. There are no other enlarged scales except the supralabials, ten in number, and a few enlarged granules on top of the nose. Mental large, an imperfect equilateral triangle. Tail long, slender, a little shorter than the distance from vent to tip of nose.

Color very dark brown, almost black; limbs brown, belly white. A white band reaching around the back of the head from eye to eye; a white band across body near the fore limbs, one across the middle of the body and one across the body near the hind limbs. Three white rings around the tail, which is almost black above and below. The extreme tip of the tail is white.

Type. — No. 7104, Mus. Comp. Zool., a single specimen, taken 16 November, 1906, on Mt. Wuchi, Central Hainan, by a Japanese collector of Mr. Alan Owston.

Glauconia carltoni, sp. nov.

Snout rounded; supraocular present, very small; rostral extending almost to level of eyes; about twice as broad as the nasal, which is completely divided into two; ocular bordering the lip for a considerable distance between two labials, the first of which reaches to the level of the nostril only; five lower labials. Scales

on body in 14 rows. Diameter of body 55 times in the total length, in length of tail 5.5 times; length of tail in that of body about 10.

Color very light brown above, ashy gray beneath.

Type. — No. 3749, Mus. Comp. Zoöl., Amballa, India, M. M. Carlton.

There are two other specimens in the collection, No. 3217, which show the same characters as the type.

The species is named for Rev. M. M. Carlton, who for many years made valuable collections in Upper India.

This new form evidently represents a localized race of *G. blanfordii* Blgr., known first from Sind, the type locality, and later from Northern Beluchistan (Alcock & Finn., Journ. Asiat. Soc., Bengal, 65, p. 561). Its most noticeable divergence is its less elongate form.

Natrix aequifasciata, sp. nov.

Eye rather large. Rostral broader than deep, just visible from above; internasals almost wedge-shaped, twice as long as broad, one and one-half times as long as prefrontals; frontal one and two-thirds as long as broad, as long as distance from end of the snout, shorter than the parietals; loreal as long as deep; two preoculars and two or three postoculars; one or two suboculars may be present, — these are very small and separated by the fifth upper labial. Temporals 2 + 3, — these may be broken into several scales; nine upper labials, the seventh largest and the fifth always entering orbit, — the fourth and sixth may do so also, or they may be excluded by the suboculars; five pairs of lower labials in contact with anterior chin shields, which are a very little shorter than the posterior. Scales in nineteen rows strongly keeled, except the outer row, on which the carination is weak. Ventrals 148–151; anal divided; subcaudals 74–75.

Color (in alcohol) boldly banded with twenty or twenty-one black bars on the body and twelve on the tail. The interspaces narrower than the bars, but less narrow laterally than dorsally, white with a slight brownish tinge. Ventral surface ivory white, with black markings of the bars; these often end abruptly at the median line. The black blotches are roughly alternate.

Types. — No. 7101, Mus. Comp. Zoöl., two specimens, each about 20 cm. long, from Mt. Wuchi, Central Hainan. Taken by one of Mr. Owston's Japanese collectors.

This strongly differentiated species shows a probable relationship to both *N. tigrina* and *N. piscator*.

Cope's *Trimenodytes balteatus* (Proc. Acad. Nat. Sci. Phila., 1894, p. 426) probably represents an abnormal *Natrix*, which, however, cannot be identified with this species.

Pseudoxenodon stejnegeri, sp. nov.

Rostral just visible from above; internasals shorter than prefrontals; frontal almost one and one-half times as long as broad, shorter than distance to tip of

snout, much shorter than parietals; loreal as long as deep; two preoculars; three postoculars; temporals $2 + 2$; eight upper labials, fourth and fifth entering orbit; five lower labials in contact with the anterior chin shields, which are very nearly the same size as the posterior. Eleven dorsal rows of scales keeled, only the dorsal 5 strongly; scales in nineteen rows anteriorly, in seventeen rows on middle of body, and in fifteen rows near the tail. Ventrals 153; anal divided; subcaudals in 68 pairs.

Color olive above, with an indistinct lateral series of dark blotches; head with a black stripe from posterior border of the orbit to the angle of the jaws; upper labials with sharp black markings along their posterior edges; upper lip yellowish; lower surfaces dull white, confluent dark olive punctulations form three irregular bands, one along the middle and one on each end of the gastrosteges; there are many scattered spots elsewhere, also larger diffuse brown blotches. On the under surface of the tail the dots are irregularly scattered and produce a gray effect. Along the sides of the tail is a white line formed by spots on the outer end of each subcaudal scale. There are no spots on the throat, which is pure white. Length of body 370 mm.; length of tail 100 mm.

Type. — No. 7103, Mus. Comp. Zoöl., a single specimen, from Mt. Arizan, Central Formosa. Taken 29 November, 1906, by one of Mr. Owston's Japanese collectors.

This species seems to be, as would be naturally expected, related to *P. dorsalis* (Günther) from China. It differs in having two preoculars instead of one, in the number of ventral and subcaudal scales, and in coloration.

It is a privilege to associate with this interesting new species of a genus hitherto unrecorded from Formosa, the name of a kindly friend and generous helper, Dr. Leonhard Stejneger.

Holarchus nesiotis, sp. nov.

Nasal divided; rostral reaching far back above, completely separating the internasals and coming into contact with the prefrontals. Frontal very large, much longer than distance to tip of snout, longer than the parietals. Loreal square; two pre- and two post-oculars; temporals $1 + 2$, the lower of the two temporals is the smaller, while the opposite is the condition in *H. formosanus* figured by Stejneger (Herp. of Japan, 1907, p. 355). Eight upper labials on each side, fourth and fifth entering eye; four labials in contact with anterior chin shield, which measure about one and one-third the size of the posterior. Scales in 19 rows, perfectly smooth. Ventrals distinctly angulate, 169; anal divided; subcaudals 56 pairs.

Color pale brown above, with an indistinct light vertebral line and four dorsal and dorso-lateral longitudinal bands of slightly darker brown. Sides and belly ivory white. On the parietals there are dark brown spots, also a symmetrical square brown, almost black, blotch below the eye on supralabials 5 and 6. A chevron-like band on the nape with its apex directed forward.

Type. — No. 7107, Mus. Comp. Zoöl., a single specimen, about 355 mm. long, from Ting-an, Hainan Island. Taken by a collector for Mr. Owston.

Related to *H. formosanus hainanensis* (Boettger), to which form Cope's *H. dolleyanus* (l. c. p. 423) must be considered a synonym. Boettger's paper (Ber. Senck. Nat. Ges. 1893-4) was received at the library of the Mus. Comp. Zoöl. Oct. 16, 1894. Cope's paper did not appear until Feb. 13, 1895.

Calamaria sondaica, sp. nov.

Rostral very nearly as deep as broad, easily visible from above; frontal a little longer than broad, considerably shorter than the parietals, a little more than twice as broad as a supraocular; one pre- and one post-ocular; diameter of the eye a little less than its distance from the mouth; five upper labials, the first nearly three times as large as the second, which is smaller than the third or fourth. These are subequal and enter the eye. The fifth is larger than the third and fourth together. A pair of infralabials in contact between the mental and the anterior pair of chin shields. Scales in 13 rows; ventrals, 154; anal entire; subcaudals 10. Tail rather obtuse. Dark reddish brown above (with fine plumbeous iridescence in life); six dark lines just visible on neck, very indistinct on body; rows of scales separated by zigzag white lines; a lateral white line on last row of scales. Ventral surfaces white (yellow in life), very heavily blotched with angular dark markings; a black line down midventral region of the tail and two black lateral lines on tail.

Type. — No. 7102, Mus. Comp. Zoöl., one specimen Buitenzorg, Java, April, 1907. T. Barbour, collector.

It is with great reluctance that this new species is described. No ophidian genus cries for a revision more than *Calamaria*. Nevertheless this new form seems to merit recognition on account of several distinctive characters.

Superficially, i. e. in coloration, this form does not bear the slightest resemblance to its nearest relative, which is *C. virgulata*; nor, it may be added, does it seem to agree with any of the forms which Boulenger (Cat. Snakes, 1894, 2, p. 340), has considered synonymous with this species.

Calamaria albopunctata, sp. nov.

Rostral somewhat broader than deep; frontal longer than broad, much shorter than parietals, and less than twice as broad as a supraocular; one pre- one post-ocular; diameter of eye less than distance to mouth; five upper labials, first, third, and fourth subequal, second and fifth large; third and fourth entering orbit; first infralabial meeting its fellow behind the symphysial; two pairs of chin shields in contact with each other. Scales in 13 rows; ventrals 247; anal entire; subcaudals 14. Tail rather blunt. Dark brown above, a lighter band on occiput; two outer rows of scales with light centres; lower surfaces yellow with a few dusky markings; a blackish line along lower surface of tail.

Type. — No. 7106, Mus. Comp. Zoöl., one specimen from the East Indies.

Several years ago a collection of reptiles was offered for sale which purported to come from the Moluccas and was marked "Ternate or Amboina." Many of the specimens undoubtedly did come from the Moluccas. The Calamaria which is described above, reminds one strongly of *C. occipitalis* Jan, and very possibly will be found locally in some one of the many small areas in Java which are as yet unknown herpetologically. That we do not yet know completely the calamarian fauna of Java is attested by the fact that in April, 1907, at Sindanglaia in Western Java, a specimen of *C. sumatrana* Edeling was taken, thus adding a species to the list, already a long one, of forms known to inhabit Java.

***Pseudelaps muelleri insulae*, subsp. nov.**

Rostral scale visible from above. The eye is somewhat greater in diameter than its distance from the mouth. The scales around the body are in 15 rows; the ventrals 146 and the subcaudals 19 pairs in number. The anal is divided. Total length 400 mm.; tail 32 mm. Boulenger's (Cat. Snakes, 1896, 3, p. 317), measurements of *P. muelleri* are as follows: "Total length 500 millim; tail 70."

Color. In life this is almost coal black above with rich plumbeous iridescence when held in bright light. The ventral surface is, in general, dusky white. Along each of the gastrosteges runs a line of dark brown spots; these spots occur in a closely grouped cluster at the ends of each ventral scale. In the gular region the spots fuse and grow darker in color; the general effect is a very deep brown. On the lower labials small white spots occur, irregularly scattered. In alcohol, however, the black has changed to a very dark dull green and the brown markings below to an olive color.

Type. — No. 7080, Mus. Comp. Zoöl., one specimen, Djamna Island, Dutch Papua. T. Barbour, collector. Djamna is a small islet, situated off the Saär district between Cape D'Urville and Humboldts bay. It lies a few miles south-east of the Arimoa (Kumamba) group of islands.

This form differs from *Pseudelaps muelleri* (Schlegel) in having a much shorter tail, fewer pairs of subcaudal scales, and a distinctive coloration.

This subspecies may be identical with "*P. schlegelii* (Günther)," which seems distinguishable as a race of *P. muelleri* (Schl.). The color of this Djamna form does not, however, seem within the variation limits of any described form.

AMPHIBIA

***Prostherapis equatorialis*, sp. nov.**

Snout depressed, projecting, rather pointed, truncate with angular canthus rostralis; loreal region slanting inward from below; nostril very close to tip of snout; interorbit very broad, slightly convex; tympanum very small but distinct, about one-third the width of eye. First finger slightly shorter than second; toes free; discs small; subarticular and inner metatarsal tubercles indistinct; no

outer metatarsal tubercle. The hind limb being carried forward along the body the tibio-tarsal articulation reaches the posterior border of the eye. Skin smooth above, tubercular on posterior part of belly and lower surfaces of thighs.

Color rich brown above, striped with darker, a narrow white vertebral line; all lower surfaces whitish. Male with a large subgular vocal sac.

Types. — No. 2261, Mus. Comp. Zoöl., two examples, from Equador.

For the sake of comparison with the above species I append a description of *P. femoralis* Barbour from Gorgona Island off the coast of Colombia.

Snout broad, depressed, with angular canthus rostralis; loreal region nearly vertical; nostril nearer tip of snout than eye; interorbital space somewhat broader than upper eyelid; tympanum indistinct but not quite concealed. First finger longer than second; rudiment of web between third and fourth toes; subarticular tubercles moderate, metatarsal tubercles small. The hind limb being carried forward along the body, the tibio-tarsal articulation reaches well beyond the eye. Skin smooth above and below.

Color gray above with faint brown marblings, below pale gray with rich chocolate markings, which are most abundant on the chin region.

Cacopoides, gen. nov.

An engystomatid related to *Cacopus*. The precoracoids are wanting, the coracoids meet each other on the median line, without an intercalated cartilage; the large metasternal cartilage, instead of being connected to the coracoids by an isthmus, much more narrow than the metasternum itself, is closely adpressed to the coracoidal symphysis. This may be made more clear by the appended drawings. Choanae small, with valve-like flaps; dermal ridges behind the choanae converging posteriorly and each with an enlarged papilla near the median line; another long ridge in front of the oesophagus which is sharply curved anteriorly near the median line. Tympanum hidden. Fingers free, toes webbed at base, tips not dilated. Sacral diapophyses rather strongly dilated.

Cacopoides borealis, sp. nov.

Habit very stout. Head small; mouth small; snout rounded; no canthus rostralis; snout about as long as orbital diameter; interorbital space more than twice the diameter of the upper eyelid. Fingers moderate, first shorter than second; toes moderate, webbed at base; no subarticular tubercles; two metatarsal tubercles, the inner strong and shovel like, the outer weak. Hind limb short. Skin smooth, the dorsal surface with scattered minute pits. Color dark brown-olive above; beneath dusky, marbled with brown. A subgular vocal sac is present.

Type. — No. 2436, Mus. Comp. Zoöl., one example, from Antung, Manchuria.

Dr. Stejneger has seen this specimen and doubts the correctness of the locality; he has suggested Antung in Kiang hsi. The specimen was, however, taken by a Japanese bird collector of Mr. Owston and from what Mr. Owston states and from

other specimens which were said to come from the same locality I feel that there is very strong circumstantial evidence that the locality is correct. It may possibly have been confused in Mr. Owston's laboratory with material from Hainan or Formosa, but even in this case would be nearly as far from its relatives as it would be in Manchuria.

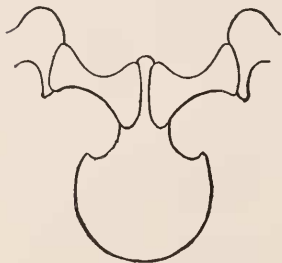


FIG. 1

Cacopus.—Pectoral girdle
(after Boulenger).

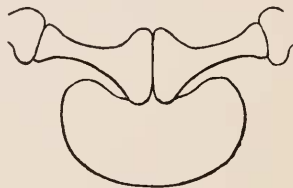


FIG. 2

Cacopoides.—Pectoral girdle.

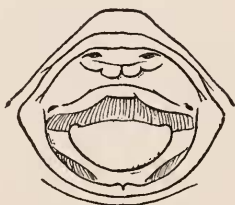


FIG. 3.

Cacopoides borealis.—Interior of mouth.

Microhyla hainanensis, sp. nov.

Habit stout. Snout rather rounded, longer than orbital diameter; interorbital space about equal to upper eyelid. Fingers moderate; first much shorter than second; fourth much the longest; toes moderate, nearly one-half webbed; tips of finger and toes not dilated; subarticular tubercles present, inconspicuous on fingers but very pronounced beneath the toes; two palmar tubercles, the outer by far the larger; two small metatarsal tubercles, the outer the more prominent. The hind limb being carried forward along the body the tibio-tarsal articulation reaches to or beyond the tip of the snout. Skin mostly smooth, with a few scattered tubercles on the posterior part of the back and a larger number on the outer sides of the thighs.

Color olive or pinkish brown in various shades; several chevron-like bands of a darker tone on the back; a dark band between the eyes which may be inter-

rupted on the median line; a dark band along each side and many cross-bars on the limbs; a large very dark brown — almost black — spot on each side of the vent. Throat and sides of chest clouded with dusky brown; the remainder of the lower parts immaculate. Male with a subgular vocal sac.

This form is evidently a near relative of *M. pulchra* (Hallowell), but is easily distinguished by the stout form of body and hind limbs, the scattered tubercles, and the conspicuous black spots.

Types. — No. 2435, Mus. Comp. Zoöl., four specimens from Mt. Wuchi, Central Hainan. Taken by a Japanese collector of Mr. Alan Owston.

***Ceratophrys intermedia*, sp. nov.**

Vomerine teeth in a slightly interrupted series between the choanae; this series is not quite straight as in *C. fryi*, but the two halves point slightly backward on the median line. The first and second fingers are of very nearly the same size, the first slightly longer than the second. The color and granulation of the back is the same as in *C. boiei* except that there is no conspicuous brown spot below the eye; and there is a white band joining the orbits.

Type. — No. 2254, Mus. Comp. Zoöl., from Santa Katharina, Brazil.

This species stands between *C. boiei* Wied., and *C. fryi* Günther.

***Bufo bankorensis*, sp. nov.**

Habit very similar to *B. himalayanus* (Günther) and *B. melanostictus* Schneider. It differs markedly from the former in the smoother crown, in that the warts on the upper surfaces of the body, and especially on the legs, are much smaller, more scattered, and subequal. It differs conspicuously from the second mentioned species in the absence of the cephalic ridges.

Crown deeply concave, smooth; ridges between eye and nostril very weak; snout short and blunt; interorbital space much wider than upper eyelid; tympanum small, vertically oval, partially covered by a fold of skin. First finger a very little longer than second; a small inner and an outer palmar tubercle, which is nearly three times as large as the inner one; subarticular tubercles single, rather prominent. There are many other tubercles on palm and digits. The hind limb being carried forward the tarso-metatarsal articulation reaches beyond the tip of the snout; toes less than half webbed, the webs with their outer edges denticulate; small, single, subarticular tubercles on all but fourth toe, where they are double; two subequal metatarsal tubercles, the inner the more prominent; lower surfaces of feet richly tuberculate like the hands. A slightly developed tarsal fold more conspicuous in the male than in the female. Upper surfaces with subequal warts well separated by areas of smooth skin; in the female specimen the warts show a tendency towards spinosity. The parotoid glands are large, suboval, or tending toward kidney shape. I do not find an internal vocal sac in the male; in this particular especially is the tendency toward

B. himalayanus. In the specimen of this sex nuptial asperities are present on the first and second finger.

Color (in alcohol) dark brown above, lighter below; a blackish band begins at posterior border of eye, covers the lower half of the paratoid gland, and runs along the side, ending in a series of spots. In the female many of the warts have black apices, a character frequent in *B. melanostictus*.

Type. — No. 2432, Mus. Comp. Zoöl., two specimens, a male and female, Bankoro, Central Formosa. Taken by a Japanese collector of Mr. Alan Owston.

This strongly marked species is evidently closely related to *Bufo melanostictus*; it also tends towards *Bufo himalayanus*. This opinion is also held by Dr. Stejneger, who has most kindly examined the types.

***Hyla kampeni*, sp. nov.**

Tongue subcircular, slightly nicked and free behind. Vomerine teeth in two short groups between the middle of the choanae, the interspace separating them as wide as one of the groups. Snout rounded, tympanum round; its diameter is equal to two-thirds of the distance from eye to nostril. Rudiment of pollux present. Fingers webbed as follows: second digit two-thirds, third wholly, fourth almost wholly, fifth wholly. The toes are all wholly included in the extent of the web. Discs large, almost as large as tympanum. Skin smooth above, belly and lower side of thighs finely granulate. Upper surfaces greenish brown (dull green in life), lower surfaces unmarked yellow.

Type. — No. 2433, Mus. Comp. Zoöl., a single specimen, taken at Wahaai, Ceram, January, 1907, by T. Barbour.

Hyla kampeni is nearly related to *H. montana* Peters e Doria. It may be readily distinguished by its larger tympanum, greater extent of webbing between the toes, and a more slender build. It is also evidently different from *H. amboinensis* Horst and *H. ruerpelli* Boettger, which we might expect to find in this locality.

Recently Dr. P. N. van Kampen has produced (Max Weber's Zoologische Ergebnisse einer Reise in Niederländisch Ost-Indien, 1907, 4, pt. 2, p. 383-418, pl. 16) a most excellent piece of work in which he tabulates the ranges of East Indian Amphibians so far as they are known. He records *Hyla dolichopsis* Cope and *H. vagabunda* Peters e Doria as the only ones hitherto known from the island of Ceram.

This species is named for Dr. van Kampen, friend and companion in travel in the Dutch East Indies.

Van Kampen has shown (Nova Guinea, 5, Zoölogy, p. 176) in a recent account of New Guinea Amphibians that it is probable that the young of several species of *Hyla* lack vomerine teeth. Is it not, then, also possible that this may be the case with some adults? Answering this in the affirmative he recommends that *Hyla* and *Hylella* be united. He also notes that Gadow (Amphibia and Reptiles, 1901) has remarked that owing to the wide discontinuity of the range of

Hylella it cannot be considered a monophyletic genus. The occurrence of three species of tree-toads lacking vomerine teeth, on the comparatively small island of Jobi, is rather remarkable.

***Hyla ouwensii*, sp. nov.**

Head short; snout squarish; loreal region rather concave; tympanum extremely small, about one-fifth diameter of eye; the tibio-tarsal articulation reaches a considerable distance beyond the snout. Fingers two-thirds webbed, toes three-fourths webbed. Skin of back rough but without enlarged tubercles, skin on belly with very many small tubercles; these are largest and most abundant about the anal region, whence the series extends out on to the inner sides of the thighs for about half their length. Upper parts of head, body, thighs, shins, feet, and arms of a grayish ground color vermiculated and blotched with blue, in alcohol; green, in life; more ashy gray shows on the limbs than on the back. Throat white, belly and lower sides of hind limbs yellowish.

Allied to *Hyla* (*Hylella*) *nigromaculata* (Meyer).

Type. — No. 2434, Mus. Comp. Zoöl., a single specimen, about an inch and a half long, taken at Pom, north coast of Jobi (Japen) Island, Geelvink Bay, Dutch Papua, February, 1907. T. Barbour, collector.

This species is named for Major P. A. Ouwens, Curator of the Buitenzorg Museum, Java, who gave me a most kind hospitality, much assistance, and information.